

Q95957 Substitute Sequence Listing 0409.TXT
SEQUENCE LISTING

<110> GAO, Guangxia
LIU, Shufeng
<120> The Recombinant Murine Leukemia Virus Reverse Transcriptase,
the Genes Encoding and the Method for Expressing it
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<141> 2006-07-11
<150> PCT/CN04/00039
<151> 2004-01-13
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| ccaagaaagc | ccaaatttgc | cagaaacagg | tcaagtatct | ggggtatctt | ctaaaagagg | 2340 |
| gtcagagatg | gctgactgag | gccagaaaag | agactgtat | ggggcagcct | actccgaaga | 2400 |
| cccctcgaca | actaagggag | ttccctaggga | ccgcaggcct | ctgtcgccctc | tggatccctg | 2460 |
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| ggggcccaga | ccaaacaaaag | gcctatcaag | aatcaagca | agcttctcta | actgccccag | 2580 |
| ccctgggtt | gccagatttgc | actaagccct | ttgaacttct | tgtgacgag | aagcaggct | 2640 |
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| ccaaaaagct | agacccagta | gcagctgggt | ggcccccctg | cctacggatg | gtacgaccca | 2760 |
| ttgcccgtact | gacaaaggat | gcagggcaagc | taaccatggg | acagccacta | gtcattctgg | 2820 |
| ccccccatgc | agtagaggca | ctagtcacac | aaccccccga | ccgctggctt | tccaaacgccc | 2880 |
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| caggacatca | aaagggacac | agcgcgagg | ctagaggcaa | ccggatggct | gaccaagcgg | 3480 |
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| atcaactgc | tagagtcgac | ctgcaggcaa | gcttggcact | ggccgtcggt | ttacaacgtc | 3600 |
| gtgactgggaa | aaaccctggc | gttacccaac | ttaatcgct | tgcagcacat | cccccttcg | 3660 |
| ccagctggcg | taatagcga | gaggccgca | ccgatcgccc | ttcccaacag | ttgcgcagcc | 3720 |
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| agattaaatc | agaacgcaga | agcggctctga | taaaaacagaa | tttgcctggc | ggcagtagcg | 3840 |
| cgggtgtccc | acctgacccc | atgccaact | cagaagtgaa | acgcggtagc | gccgatgtta | 3900 |
| gtgtgggttc | tccccatgcg | agagtagggaa | actgcccaggc | atcaaataaa | acgaaaggct | 3960 |
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| ggccttttgc | cgtttctaca | aactcttttgc | gtttatttttgc | ctaaatacat | tcaaataatgt | 4200 |
| atccgctcat | gagacaataa | ccctgataaa | tgcttcaata | atattgaaaa | aggaagagta | 4260 |
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| gtgttgcacgc | cgggcaagag | caactcggtc | gccgcataca | ctattctcag | aatgacttgg | 4560 |
| ttgagttactc | accagtccaca | gaaaagcatac | ttacggatgg | catgacagta | agagaattat | 4620 |
| gcagtgtgc | cataaccatg | agtgataaca | ctgcggccaa | cttacttctg | acaacgatcg | 4680 |
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| ctgttagcaat | ggcaacaacg | ttgcgcaaaac | tattaacttgc | cgaactactt | actctagtt | 4860 |
| cccgcaaca | attaatagac | tggatggagg | cggataaaatgt | tgcaggacca | cttctgcgtc | 4920 |
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| cacagcccag | cttggagcga | acgacctaca | ccgaactgag | ataacctacag | cgtgagctat | 6180 |
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<220>

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| 1 | | | | 5 | | | 10 | | | | 15 | | | | |
| Pro | Asp | Val | Ser | Leu | Gly | Ser | Thr | Trp | Leu | Ser | Asp | Phe | Pro | Gln | Ala |
| | | | | | | | 20 | | 25 | | | 30 | | | |
| Trp | Ala | Glu | Thr | Gly | Gly | Met | Gly | Leu | Ala | Val | Arg | Gln | Ala | Pro | Leu |
| | | | | | | 35 | | 40 | | | 45 | | | | |
| Ile | Ile | Pro | Leu | Lys | Ala | Thr | Ser | Thr | Pro | Val | Ser | Ile | Lys | Gln | Tyr |
| | | | | | | 50 | | 55 | | | 60 | | | | |
| Pro | Met | Ser | Gln | Glu | Ala | Arg | Leu | Gly | Ile | Lys | Pro | His | Ile | Gln | Arg |
| | | | | | | 65 | | 70 | | | 75 | | | | 80 |
| Leu | Leu | Asp | Ala | Gly | Ile | Leu | Val | Pro | Cys | Gln | Ser | Pro | Trp | Asn | Thr |
| | | | | | | 85 | | 90 | | | 95 | | | | |
| Pro | Leu | Leu | Pro | Val | Lys | Lys | Pro | Gly | Thr | Asn | Asp | Tyr | Arg | Pro | Val |
| | | | | | | 100 | | 105 | | | 110 | | | | |
| Gln | Asp | Leu | Arg | Glu | Val | Asn | Lys | Arg | Val | Glu | Asp | Ile | His | Pro | Thr |
| | | | | | | 115 | | 120 | | | 125 | | | | |
| Val | Pro | Asn | Pro | Tyr | Asn | Leu | Leu | Ser | Gly | Leu | Pro | Pro | Ser | His | Gln |
| | | | | | | 130 | | 135 | | | 140 | | | | |
| Trp | Tyr | Thr | Val | Leu | Asp | Leu | Lys | Asp | Ala | Phe | Phe | Cys | Leu | Arg | Leu |
| | | | | | | 145 | | 150 | | | 155 | | | | 160 |
| His | Pro | Thr | Ser | Gln | Pro | Leu | Phe | Ala | Phe | Glu | Trp | Arg | Asp | Pro | Glu |
| | | | | | | 165 | | 170 | | | 175 | | | | |
| Met | Gly | Ile | Ser | Gly | Gln | Leu | Thr | Trp | Thr | Arg | Leu | Pro | Gln | Gly | Phe |
| | | | | | | 180 | | 185 | | | 190 | | | | |
| Lys | Asn | Ser | Pro | Thr | Leu | Phe | Asp | Glu | Ala | Leu | His | Arg | Asp | Leu | Ala |
| | | | | | | 195 | | 200 | | | 205 | | | | |
| Asp | Phe | Arg | Ile | Gln | His | Pro | Asp | Leu | Ile | Leu | Leu | Gln | Tyr | Val | Asp |

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|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 210 | Asp | Leu | Leu | Leu | Ala | Ala | Thr | Ser | Glu | Leu | Asp | Cys | Gln | Gln | Gly | Thr |
| 215 | 215 | 220 | | | | | | | | | | | | | | |
| 225 | | 230 | 235 | 240 | | | | | | | | | | | | |
| Arg | Ala | Leu | Leu | Gln | Thr | Leu | Gly | Asn | Leu | Gly | Tyr | Arg | Ala | Ser | Ala | |
| 245 | 245 | 250 | 255 | | | | | | | | | | | | | |
| Lys | Lys | Ala | Gln | Ile | Cys | Gln | Lys | Gln | Val | Lys | Tyr | Leu | Gly | Tyr | Leu | |
| 260 | 260 | 265 | 270 | | | | | | | | | | | | | |
| Leu | Lys | Glu | Gly | Gln | Arg | Trp | Leu | Thr | Glu | Ala | Arg | Lys | Glu | Thr | Val | |
| 275 | 275 | 280 | 285 | | | | | | | | | | | | | |
| Met | Gly | Gln | Pro | Thr | Pro | Lys | Thr | Pro | Arg | Gln | Leu | Arg | Glu | Phe | Leu | |
| 290 | 290 | 295 | 300 | | | | | | | | | | | | | |
| Gly | Thr | Ala | Gly | Phe | Cys | Arg | Leu | Trp | Ile | Pro | Gly | Phe | Ala | Glu | Met | |
| 305 | 305 | 310 | 315 | 320 | | | | | | | | | | | | |
| Ala | Ala | Pro | Leu | Tyr | Pro | Leu | Thr | Lys | Thr | Gly | Thr | Leu | Phe | Asn | Trp | |
| 325 | 325 | 330 | 335 | | | | | | | | | | | | | |
| Gly | Pro | Asp | Gln | Gln | Lys | Ala | Tyr | Gln | Glu | Ile | Lys | Gln | Ala | Leu | Leu | |
| 340 | 340 | 345 | 350 | | | | | | | | | | | | | |
| Thr | Ala | Pro | Ala | Leu | Gly | Leu | Pro | Asp | Leu | Thr | Lys | Pro | Phe | Glu | Leu | |
| 355 | 355 | 360 | 365 | | | | | | | | | | | | | |
| Phe | Val | Asp | Glu | Lys | Gln | Gly | Tyr | Ala | Lys | Gly | Val | Leu | Thr | Gln | Lys | |
| 370 | 370 | 375 | 380 | | | | | | | | | | | | | |
| Leu | Gly | Pro | Trp | Arg | Arg | Pro | Val | Ala | Tyr | Leu | Ser | Lys | Lys | Leu | Asp | |
| 385 | 385 | 390 | 395 | 400 | | | | | | | | | | | | |
| Pro | Val | Ala | Ala | Gly | Trp | Pro | Pro | Cys | Leu | Arg | Met | Val | Ala | Ile | | |
| 405 | 405 | 410 | 415 | | | | | | | | | | | | | |
| Ala | Val | Leu | Thr | Lys | Asp | Ala | Gly | Lys | Leu | Thr | Met | Gly | Gln | Pro | Leu | |
| 420 | 420 | 425 | 430 | | | | | | | | | | | | | |
| Val | Ile | Leu | Ala | Pro | His | Ala | Val | Glu | Ala | Leu | Val | Lys | Gln | Pro | Pro | |
| 435 | 435 | 440 | 445 | | | | | | | | | | | | | |
| Asp | Arg | Trp | Leu | Ser | Asn | Ala | Arg | Met | Thr | His | Tyr | Gln | Ala | Leu | Leu | |
| 450 | 450 | 455 | 460 | | | | | | | | | | | | | |
| Leu | Asp | Thr | Asp | Arg | Val | Gln | Phe | Gly | Pro | Val | Val | Ala | Leu | Asn | Pro | |
| 465 | 465 | 470 | 475 | 480 | | | | | | | | | | | | |
| Ala | Thr | Leu | Leu | Pro | Leu | Pro | Glu | Gly | Leu | Gln | His | Asn | Cys | Leu | | |
| 485 | 485 | 490 | 495 | | | | | | | | | | | | | |
| Asp | Ile | Leu | Ala | Glu | Ala | His | Gly | Thr | Arg | Pro | Asp | Leu | Thr | Asp | Gln | |
| 500 | 500 | 505 | 510 | | | | | | | | | | | | | |
| Pro | Leu | Pro | Asp | Ala | Asp | His | Thr | Trp | Tyr | Thr | Asn | Gly | Ser | Ser | Leu | |
| 515 | 515 | 520 | 525 | | | | | | | | | | | | | |
| Leu | Gln | Glu | Gly | Gln | Arg | Lys | Ala | Gly | Ala | Ala | Val | Thr | Thr | Glu | Thr | |
| 530 | 530 | 535 | 540 | | | | | | | | | | | | | |
| Glu | Val | Ile | Trp | Ala | Lys | Ala | Leu | Pro | Ala | Gly | Thr | Ser | Ala | Gln | Arg | |
| 545 | 545 | 550 | 555 | 560 | | | | | | | | | | | | |
| Ala | Glu | Leu | Ile | Ala | Leu | Thr | Gln | Ala | Leu | Lys | Met | Ala | Glu | Gly | Lys | |
| 565 | 565 | 570 | 575 | | | | | | | | | | | | | |
| Lys | Leu | Asn | Val | Tyr | Thr | Asp | Ser | Arg | Tyr | Ala | Phe | Ala | Thr | Ala | His | |
| 580 | 580 | 585 | 590 | | | | | | | | | | | | | |
| Ile | His | Gly | Glu | Ile | Tyr | Arg | Arg | Arg | Gly | Leu | Leu | Thr | Ser | Glu | Gly | |
| 595 | 595 | 600 | 605 | | | | | | | | | | | | | |
| Lys | Glu | Ile | Lys | Asn | Lys | Asp | Glu | Ile | Leu | Ala | Leu | Leu | Lys | Ala | Leu | |
| 610 | 610 | 615 | 620 | | | | | | | | | | | | | |
| Phe | Leu | Pro | Lys | Arg | Leu | Ser | Ile | Ile | His | Cys | Pro | Gly | His | Gln | Lys | |
| 625 | 625 | 630 | 635 | 640 | | | | | | | | | | | | |
| Gly | His | Ser | Ala | Glu | Ala | Arg | Gly | Asn | Arg | Met | Ala | Asp | Gln | Ala | Ala | |
| 645 | 645 | 650 | 655 | | | | | | | | | | | | | |
| Arg | Lys | Ala | Ala | Ile | Thr | Glu | Thr | Pro | Asp | Thr | Ser | Thr | Leu | Leu | | |
| 660 | 660 | 665 | 670 | | | | | | | | | | | | | |

<210> 3
 <211> 7488
 <212> DNA
 <213> artificial sequence

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<220>

<223> plasmid DNA

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| gtcaattcag | ggtggtaat | gtgaaaccag | taacgttata | cgatgtcgca | gagtatccg | 120 | |
| gtgtctctta | tcagaccgtt | tcccgcgtgg | tgaaccaggc | cagcacgtt | tctgcgaaaa | 180 | |
| cgcggggaaa | agtggaaagcg | gcgatggcg | agctgaatta | cattccaaac | cgcgtggcac | 240 | |
| aacaactggc | gggcaaaacag | tcgttgcgtga | ttggcggttc | cacccttca | ctggccctgc | 300 | |
| acgcgcgcgtc | gcaaattgtc | gcggcgattt | aatctcgcc | cgatcaactt | gtgcccacg | 360 | |
| tggtgggtgc | gatggtagaa | cgaagcggcg | tcgaaggctt | taaaggcgccg | gtgcacaatc | 420 | |
| ttctcgccga | acgcgtcagt | gggctgtatca | ttaactatcc | gctggatgac | caggatgcca | 480 | |
| ttgctgtgg | agctgcctgc | actaatgttc | cggtgttatt | tcttgatgtc | tctgaccaga | 540 | |
| cacccatcaa | cagtattatt | ttctccatg | aagacgttac | gctgtgttgc | gtggagcatc | 600 | |
| tggtcgcatt | gggtcaccag | caaatcgcc | tggttagcg | cccattaaat | tctgtctcg | 660 | |
| cgcgtctgcg | tctggctggc | tggcataaat | atctcactcg | caatcaaatt | cagccgatag | 720 | |
| cggAACGGGA | aggcgactgg | agtgcatgt | ccgggtttca | acaaaccatg | caaatgctga | 780 | |
| atgagggcat | cgttcccact | gctgtgttgc | ttgccaacga | tcagatggcg | ctggccgcaa | 840 | |
| tgcgcgccat | taccgagtcc | gggctgcgc | ttgggtgcgg | tatctcggt | gtgggatacg | 900 | |
| acgataccga | agacagctca | tgttataatcc | cgccgttaac | caccatcaaa | caggattttc | 960 | |
| gcctgctggg | gcaaaccaggc | gtggaccgct | tgctgtcaact | ctctcaggc | caggcggta | 1020 | |
| aggcaatca | gctgttgc | gtctcactgg | tgaaaagaaa | aaccaccctg | gcgcctaata | 1080 | |
| cgcggaccgc | ctctcccccgc | gcgttggccg | attcattaaat | gcagctggca | cgacagggtt | 1140 | |
| cccgaactgg | aaggcgccag | tgagcgttac | gcaattaaat | tgagtttagt | cactcattag | 1200 | |
| gcacaattct | catgttttgc | agcttatcat | cgactgcacg | gtgcaccaat | gtttctggcg | 1260 | |
| tcaggcagcc | atcggaaagct | gtggtatggc | tgtgcaggc | gttaatcact | gcataattcg | 1320 | |
| tgtcgctcaa | ggcgcactcc | cgttctggat | aatgtttttt | gcggccgacat | cataacgggt | 1380 | |
| ctggcaataa | tcttgcataat | agctgttgc | attaatcat | cggtcgat | aatgtgttgc | 1440 | |
| attgtgagcg | gataacaattt | tgaattctt | agatttgc | ggggataaca | atttcacaca | 1500 | |
| ggaaacagaa | tatgacccta | aatatagaag | atgagcatcg | gctacatgag | acctcaaaag | 1560 | |
| agccagatgt | ttctcttaggg | tccacatggc | tgtctgattt | tcctcaggcc | tgggcccggaa | 1620 | |
| ccgggggcatt | gggactggca | gttcgccaag | ctccctctgt | cataacctct | aaagcaacct | 1680 | |
| ctaccccccgt | gtccataaaaa | caataccca | tgtcacaaga | agccagactg | gggatcaagc | 1740 | |
| cccacataca | gagactgttg | gacaacggg | tcctgttacc | ctggcagttc | ccctggaaaca | 1800 | |
| cgcggctgtc | acccgttaag | aaaccaggga | ctaattgatta | taggcgttc | caggatctga | 1860 | |
| gagaagtcaa | caagcggtt | gaagacatcc | accccaccgt | gccccaccct | tacaacccct | 1920 | |
| tgagcgggct | cccaccgtcc | caccgttgc | acactgtgt | tgattttaaag | gtgcctttt | 1980 | |
| tctgccttag | actccacccc | accagtacg | ctctcttcgc | ctttgatgtt | agagatccag | 2040 | |
| agatggaaat | ctcaggacaa | ttgacctgg | ccagactccc | acagggtttc | aaaaacagtc | 2100 | |
| ccaccctgtt | tgtgaggc | ctgcacagag | acctagcaga | cttccggatc | cagcaccagg | 2160 | |
| acttgatcct | gctacagtac | gtggatgtact | tactgtgtc | cgccacttct | gagctagact | 2220 | |
| gccaacaagg | tactcgcc | ctgttacaaa | ccctaggaa | cctcgggtat | cgggcctcg | 2280 | |
| ccaagaaaggc | ccaaatttgc | cagaaacagg | tcaagtat | ggggatcttt | ctaaaagagg | 2340 | |
| gtcagagatg | gctgactgag | gccagaaaag | agactgtgt | ggggcagcct | actccgaaga | 2400 | |
| cccccctgaca | actaagggg | ttccttaggg | cgccaggctt | ctgtcgcc | tggatccctg | 2460 | |
| ggtttgcaga | aatggcggcc | cccttgcatt | ctctcaccat | aacggggact | ctgtttaatt | 2520 | |
| ggggcccgaga | ccaaacaaaag | gcctatcaag | aatcaagca | agctttctt | actgccccag | 2580 | |
| ccctgggggtt | gccagattt | actaaggcc | ttgaactt | tgtcgacg | aagcagggt | 2640 | |
| acgccaagg | tgtccta | aaaaactgg | gaccttggc | tcggccgggt | gcctacctgt | 2700 | |
| ccaaaaagct | agaccccgat | gcagctgggt | ggccccctt | cctacggat | gtagcagcca | 2760 | |
| ttgcccgtact | gacaaaggat | gcaggc | taaccatgg | acagccacta | gtcattctgg | 2820 | |
| ccccccatgc | agtagaggc | ctagtc | aacccccc | ccgctggct | tccaaacgccc | 2880 | |
| ggatgactca | ctatcaggcc | ttgcttttgg | acacggacc | ggttccagtt | ggaccgggt | 2940 | |
| tagccctgaa | cccggtctac | ctgctccac | tgcctgag | agggctgca | cacaactgccc | 3000 | |
| ttgatatacct | ggccgaaagcc | cacggaaaccc | gacccgac | aacggacc | ccgctccc | 3060 | |
| acgcccacca | cacctgttac | acgaatggaa | gcagtctt | acaagaggga | cagcgtt | 3120 | |
| cgggagctgc | ggtgaccacc | gagaccgagg | taatctggc | taaaggcc | ccagccgg | 3180 | |
| catccgtca | gcgggctgaa | ctgatagc | tcacc | cctaaagat | gcagaaggt | 3240 | |
| agaagctaaa | tgttataact | gatagccgtt | atgttttgc | tactgtccat | atccatggag | 3300 | |
| aaatatacag | aggcggtgg | ttgctcacat | cagaaggca | agatcaaa | aataaagacg | 3360 | |
| agatcttggc | cctactaaaa | gcccttttcc | tgcccaaaag | acttagcata | atccattgtc | 3420 | |
| caggacatca | aaagggacac | agcggccgagg | ctagaggca | ccggatggct | gaccaagcgg | 3480 | |
| cccgaaaggc | agccatcaca | gagactccag | acaccttac | cctcctccat | caccatcacc | 3540 | |

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| gtgactggaa | aaaccctggc | gttacccaac | ttaatcgcc | tgcagcacat | 3660 |
| ccagctggcg | taatagcgaa | gaggcccgca | ccgatcgccc | ttcccaacag | 3720 |
| tgaatggcga | atggcagctt | ggctgtttt | gcggatgaga | taagattttc | 3780 |
| agattaaatc | agaacgcaga | agcggctcg | taaaacaga | tttgccgtgc | 3840 |
| cgggtggccc | acctgacccc | atgccaact | cagaagtga | acgcgcgtgc | 3900 |
| gtgtggggtc | tccccatgcg | agatgtgg | actgcgcaggc | atcaataaaa | 3960 |
| cagtcgaaag | actggggcctt | tcgttttac | tgttgttgc | cggtaacgc | 4020 |
| aggacaaatc | cggccgggagc | ggatttgaac | tttgcgaagc | aacggccgg | 4080 |
| gcaggacgccc | cggccataaac | tgccaggcat | caaattaa | agaaggccat | 4140 |
| ggccttttgc | cgttctaca | aactctttt | tttattttt | ctaaatacat | 4200 |
| atccgcctat | gagacaataa | ccctgataaa | tgcttcaata | atattgaaaa | 4260 |
| tgagtattca | acatttccgt | gtgccttta | ttccctttt | tgcggcattt | 4320 |
| tttttgcctca | cccgagaaac | ctggtaaag | taaaagatgc | tgaagatcag | 4380 |
| gagtgggtta | catcgaactg | gatctcaaca | gcggtaagat | ccttggagat | 4440 |
| aagaacgttc | tccaatgtat | agcactttt | aagttctgt | atgtggcgcg | 4500 |
| gtgttgacgc | cgggcaagag | caactcggtc | gccgcataca | ctattctcg | 4560 |
| ttgagtagtc | accagtacac | gaaaagcatc | ttacggatgg | catgacagta | 4620 |
| gcagtgtcgc | cataaccatg | agtgataaca | ctgcggccaa | cttacttctg | 4680 |
| gaggaccgaa | ggagctaacc | gttttttgc | acaacatggg | ggatcatgt | 4740 |
| atcggtggaa | accggagctg | aatgaagcca | taccaa | cgagcgtgac | 4800 |
| ctgtagcaat | ggcaacaac | ttgcgaaac | tattaactgg | cgaactactt | 4860 |
| cccgccaaaca | attaatagac | tggatggagg | cggataaa | tgcaggacca | 4920 |
| cggcccttcc | ggctggctgg | tttattgtctg | ataatctgg | agccggtag | 4980 |
| gcggatcat | tgcagcactg | gggcagatg | gtaagccctc | ccgtatcgta | 5040 |
| cgacggggag | tcaggcaact | atggatgaac | aaaatagaca | gatgcgttag | 5100 |
| cactgattaa | gcattggtaa | ctgtcagacc | aagttaactc | atataactt | 5160 |
| taccccccgtt | gataatcaga | aaagcccaa | aaacaggaag | attgtataag | 5220 |
| aattgtaaac | gtaatattt | tgtaaaatt | cgcgttaat | ttttgttaaa | 5280 |
| ttttaaccaa | taggcccggaa | tcggccaaaat | cccttataaa | tcaaaagaat | 5340 |
| agggttgagt | gtgttccag | tttggaaacaa | gagttccacta | ttaaagaacg | 5400 |
| cgtcaaaagg | cgaaaaaacc | tctatcagg | cgatggccca | ctacgtgaac | 5460 |
| atcaagttt | ttgggggtcg | ggtgcgtaa | agcactaaat | cgaaacccta | 5520 |
| ccgatttaga | gcttgacggg | gaaagccggc | gaaacgtggc | agaaaggaag | 5580 |
| gaaaggagcg | ggcgctaggg | cgctggcaag | tgtagcggc | acgcgtgcgc | 5640 |
| acccgcgcg | cttaatgcgc | cgctacagg | cgcgtaaaag | gatcttaggt | 5700 |
| ttgataatct | catgaccaaa | atcccttaac | gtgagttt | gttccactga | 5760 |
| ccgtagaaaa | gatcaaagga | tcttcttgc | atcctttt | tctgcgcgt | 5820 |
| tgcaaaacaaa | aaaaccaccc | ctaccagcg | ttgtttgtt | gccgatcaa | 5880 |
| ctcttttcc | gaaggttaact | ggcttcagca | gagcgcagat | accaaaact | 5940 |
| tgtagccgt | gttaggcccac | cacttcaaga | actctgtgc | accgcctaca | 6000 |
| tgctaattcc | gttaccagg | gctgtgc | gtggcgataa | gtcggtctt | 6060 |
| actcaagacg | atagttacc | gataaggcgc | acgcggcggg | ctgaacgggg | 6120 |
| cacagcccg | cttggagcga | acgacactaca | ccgaactgag | atacctacag | 6180 |
| gagaaagcgc | cacgcttccc | gaaggagaa | aggcggacag | gtatccggta | 6240 |
| tcggAACAGG | agagcgcac | agggagctt | cagggggaaa | cgcctggat | 6300 |
| ctgtcggtt | tcgccaccc | tgacttgc | gtcgatttt | gtgatgcgt | 6360 |
| ggagccat | gaaaaacgc | agcaacgcgg | ccttttac | tttgcgttgc | 6420 |
| cttttgcctca | catgttctt | cctgcgtt | cccctgattt | tgtggataac | 6480 |
| cctttgatgt | agctgatacc | gctgcgc | gccgaacgac | cgagcgc | 6540 |
| gcgaggaagc | ggaagagcgc | ctgatgcgt | attttctct | tacgcata | 6600 |
| cacaccgc | atggtgcact | ctcagtaaa | tctgcct | tgccgcata | 6660 |
| atacactcc | ctatcgctac | gtgactgg | catggctgc | ccccgcac | 6720 |
| cgctgacgc | ccctgacgg | cttgcgt | cccgcatcc | gcttacagac | 6780 |
| cgctccgg | agctgcgt | gtcagagg | tccaccgt | tcaccgaa | 6840 |
| gctgcgt | agctcatcg | cggtgcgt | cagcgatttca | cagatgtctg | 6900 |
| cgcgtcc | tcgttgagtt | tctccaga | cgtaatgtc | tggcttgc | 6960 |
| catgttaagg | gggggtttt | cctgttgc | cactgtatgc | ctccgtgt | 7020 |
| ctgttcatgg | gggtatgt | accgtgaaa | cgagagagga | tgctcacat | 7080 |
| gatgtatgg | atggccgggtt | actggaaacgt | tgtggggta | aacaactggc | 7140 |
| cggcgggacc | agagaaaaat | cactcagg | caatgcgc | gcttcgtt | 7200 |
| ggtgttccac | aggtagcca | gcagcatcct | gcatgc | tccggaa | 7260 |
| ggcgctgact | tcccggtt | cagacttac | gaaacacgg | aaccgaagac | 7320 |

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 gttgctcagg tcgcagacgt tttgcagcag cagtcgcttc acgttcgctc gcgtatcggt 7380
 gattcattct gctaaccagt aaggcaaccc cgccagccta gccgggtcct caacgacagg 7440
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 <211> 671
 <212> PRT
 <213> artificial sequence

<220>
 <223> reverse transcriptase

<400> 4

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 Trp Ala Glu Thr Gly Gly Met Gly Leu Ala Val Arg Gln Ala Pro Leu
 35 40 45
 Ile Ile Pro Leu Lys Ala Thr Ser Thr Pro Val Ser Ile Lys Gln Tyr
 50 55 60
 Pro Met Ser Gln Glu Ala Arg Leu Gly Ile Lys Pro His Ile Gln Arg
 65 70 75 80
 Leu Leu Asp Asn Gly Ile Leu Val Pro Cys Gln Ser Pro Trp Asn Thr
 85 90 95
 Pro Leu Leu Pro Val Lys Lys Pro Gly Thr Asn Asp Tyr Arg Pro Val
 100 105 110
 Gln Asp Leu Arg Glu Val Asn Lys Arg Val Glu Asp Ile His Pro Thr
 115 120 125
 Val Pro Asn Pro Tyr Asn Leu Leu Ser Gly Leu Pro Pro Ser His Gln
 130 135 140
 Trp Tyr Thr Val Leu Asp Leu Lys Asp Ala Phe Phe Cys Leu Arg Leu
 145 150 155 160
 His Pro Thr Ser Gln Pro Leu Phe Ala Phe Glu Trp Arg Asp Pro Glu
 165 170 175
 Met Gly Ile Ser Gly Gln Leu Thr Trp Thr Arg Leu Pro Gln Gly Phe
 180 185 190
 Lys Asn Ser Pro Thr Leu Phe Asp Glu Ala Leu His Arg Asp Leu Ala
 195 200 205
 Asp Phe Arg Ile Gln His Pro Asp Leu Ile Leu Leu Gln Tyr Val Asp
 210 215 220
 Asp Leu Leu Leu Ala Ala Thr Ser Glu Leu Asp Cys Gln Gln Gly Thr
 225 230 235 240
 Arg Ala Leu Leu Gln Thr Leu Gly Asn Leu Gly Tyr Arg Ala Ser Ala
 245 250 255
 Lys Lys Ala Gln Ile Cys Gln Lys Gln Val Lys Tyr Leu Gly Tyr Leu
 260 265 270
 Leu Lys Glu Gly Gln Arg Trp Leu Thr Glu Ala Arg Lys Glu Thr Val
 275 280 285
 Met Gly Gln Pro Thr Pro Lys Thr Pro Arg Gln Leu Arg Glu Phe Leu
 290 295 300
 Gly Thr Ala Gly Phe Cys Arg Leu Trp Ile Pro Gly Phe Ala Glu Met
 305 310 315 320
 Ala Ala Pro Leu Tyr Pro Leu Thr Lys Thr Gly Thr Leu Phe Asn Trp
 325 330 335
 Gly Pro Asp Gln Gln Lys Ala Tyr Gln Glu Ile Lys Gln Ala Leu Leu
 340 345 350
 Thr Ala Pro Ala Leu Gly Leu Pro Asp Leu Thr Lys Pro Phe Glu Leu
 355 360 365
 Phe Val Asp Glu Lys Gln Gly Tyr Ala Lys Gly Val Leu Thr Gln Lys
 370 375 380
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<210> 5
<211> 17
<212> DNA
<213> artificial sequence

<220>
<223> primer

<400> 5
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17

<210> 6
<211> 29
<212> DNA
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<220>
<223> primer

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29

<210> 7
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<220>
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17

<210> 8
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<212> DNA
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<220>
<223> primer

<400> 8
cggaattctg gtaccctgcc agtc

24

<210> 9
<211> 671
<212> PRT
<213> artificial sequence

<220>
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<400> 9
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20 25 30
Trp Ala Glu Thr Gly Gly Met Gly Leu Ala Val Arg Gln Ala Pro Leu
35 40 45
Ile Ile Pro Leu Lys Ala Thr Ser Thr Pro Val Ser Ile Lys Gln Tyr
50 55 60
Pro Met Ser Gln Glu Ala Arg Leu Gly Ile Lys Pro His Ile Gln Arg
65 70 75 80
Leu Leu Asp Gln Gly Ile Leu Val Pro Cys Gln Ser Pro Trp Asn Thr
85 90 95
Pro Leu Leu Pro Val Lys Lys Pro Gly Thr Asn Asp Tyr Arg Pro Val
100 105 110
Gln Asp Leu Arg Glu Val Asn Lys Arg Val Glu Asp Ile His Pro Thr
115 120 125
Val Pro Asn Pro Tyr Asn Leu Leu Ser Gly Leu Pro Pro Ser His Gln
130 135 140
Trp Tyr Thr Val Leu Asp Leu Lys Asp Ala Phe Phe Cys Leu Arg Leu
145 150 155 160
His Pro Thr Ser Gln Pro Leu Phe Ala Phe Glu Trp Arg Asp Pro Glu
165 170 175
Met Gly Ile Ser Gly Gln Leu Thr Trp Thr Arg Leu Pro Gln Gly Phe
180 185 190
Lys Asn Ser Pro Thr Leu Phe Asp Glu Ala Leu His Arg Asp Leu Ala
195 200 205
Asp Phe Arg Ile Gln His Pro Asp Leu Ile Leu Leu Gln Tyr Val Asp
210 215 220
Asp Leu Leu Leu Ala Ala Thr Ser Glu Leu Asp Cys Gln Gln Gly Thr
225 230 235 240
Arg Ala Leu Leu Gln Thr Leu Gly Asn Leu Gly Tyr Arg Ala Ser Ala
245 250 255
Lys Lys Ala Gln Ile Cys Gln Lys Gln Val Lys Tyr Leu Gly Tyr Leu
260 265 270
Leu Lys Glu Gly Gln Arg Trp Leu Thr Glu Ala Arg Lys Glu Thr Val
275 280 285
Met Gly Gln Pro Thr Pro Lys Thr Pro Arg Gln Leu Arg Glu Phe Leu

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|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
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| Gly | Thr | Ala | Gly | Phe | Cys | Arg | Leu | Trp | Ile | Pro | Gly | Phe | Ala | Glu | Met |
| 305 | | | | | 310 | | | | 315 | | | 320 | | | |
| Ala | Ala | Pro | Leu | Tyr | Pro | Leu | Thr | Lys | Thr | Gly | Thr | Leu | Phe | Asn | Trp |
| | | | | | | | | | 325 | | | 330 | | | 335 |
| Gly | Pro | Asp | Gln | Gln | Lys | Ala | Tyr | Gln | Glu | Ile | Lys | Gln | Ala | Leu | Leu |
| | | | | | | | | | 340 | | | 345 | | | 350 |
| Thr | Ala | Pro | Ala | Leu | Gly | Leu | Pro | Asp | Leu | Thr | Lys | Pro | Phe | Glu | Leu |
| | | | | | | | | | 355 | | | 360 | | | 365 |
| Phe | Val | Asp | Glu | Lys | Gln | Gly | Tyr | Ala | Lys | Gly | Val | Leu | Thr | Gln | Lys |
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| Leu | Gly | Pro | Trp | Arg | Arg | Pro | Val | Ala | Tyr | Leu | Ser | Lys | Lys | Leu | Asp |
| | | | | | | | | | 385 | | | 390 | | | 400 |
| Pro | Val | Ala | Ala | Gly | Trp | Pro | Pro | Cys | Leu | Arg | Met | Val | Ala | Ala | Ile |
| | | | | | | | | | 405 | | | 410 | | | 415 |
| Ala | Val | Leu | Thr | Lys | Asp | Ala | Gly | Lys | Leu | Thr | Met | Gly | Gln | Pro | Leu |
| | | | | | | | | | 420 | | | 425 | | | 430 |
| Val | Ile | Leu | Ala | Pro | His | Ala | Val | Glu | Ala | Leu | Val | Lys | Gln | Pro | Pro |
| | | | | | | | | | 435 | | | 440 | | | 445 |
| Asp | Arg | Trp | Leu | Ser | Asn | Ala | Arg | Met | Thr | His | Tyr | Gln | Ala | Leu | Leu |
| | | | | | | | | | 450 | | | 455 | | | 460 |
| Leu | Asp | Thr | Asp | Arg | Val | Gln | Phe | Gly | Pro | Val | Val | Ala | Leu | Asn | Pro |
| | | | | | | | | | 465 | | | 470 | | | 480 |
| Ala | Thr | Leu | Leu | Pro | Leu | Pro | Glu | Glu | Gly | Leu | Gln | His | Asn | Cys | Leu |
| | | | | | | | | | 485 | | | 490 | | | 495 |
| Asp | Ile | Leu | Ala | Glu | Ala | His | Gly | Thr | Arg | Pro | Asp | Leu | Thr | Asp | Gln |
| | | | | | | | | | 500 | | | 505 | | | 510 |
| Pro | Leu | Pro | Asp | Ala | Asp | His | Thr | Trp | Tyr | Thr | Asp | Gly | Ser | Ser | Leu |
| | | | | | | | | | 515 | | | 520 | | | 525 |
| Leu | Gln | Glu | Gly | Gln | Arg | Lys | Ala | Gly | Ala | Ala | Val | Thr | Thr | Glu | Thr |
| | | | | | | | | | 530 | | | 535 | | | 540 |
| Glu | Val | Ile | Trp | Ala | Lys | Ala | Leu | Pro | Ala | Gly | Thr | Ser | Ala | Gln | Arg |
| | | | | | | | | | 545 | | | 550 | | | 560 |
| Ala | Glu | Leu | Ile | Ala | Leu | Thr | Gln | Ala | Leu | Lys | Met | Ala | Glu | Gly | Lys |
| | | | | | | | | | 565 | | | 570 | | | 575 |
| Lys | Leu | Asn | Val | Tyr | Thr | Asp | Ser | Arg | Tyr | Ala | Phe | Ala | Thr | Ala | His |
| | | | | | | | | | 580 | | | 585 | | | 590 |
| Ile | His | Gly | Glu | Ile | Tyr | Arg | Arg | Arg | Gly | Leu | Leu | Thr | Ser | Glu | Gly |
| | | | | | | | | | 595 | | | 600 | | | 605 |
| Lys | Glu | Ile | Lys | Asn | Lys | Asp | Glu | Ile | Leu | Ala | Leu | Leu | Lys | Ala | Leu |
| | | | | | | | | | 610 | | | 615 | | | 620 |
| Phe | Leu | Pro | Lys | Arg | Leu | Ser | Ile | Ile | His | Cys | Pro | Gly | His | Gln | Lys |
| | | | | | | | | | 625 | | | 630 | | | 640 |
| Gly | His | Ser | Ala | Glu | Ala | Arg | Gly | Asn | Arg | Met | Ala | Asp | Gln | Ala | Ala |
| | | | | | | | | | 645 | | | 650 | | | 655 |
| Arg | Lys | Ala | Ala | Ile | Thr | Glu | Thr | Pro | Asp | Thr | Ser | Thr | Leu | Leu | |
| | | | | | | | | | 660 | | | 665 | | | 670 |